KERN & Sohn GmbH

Ziegelei 1
D-72336 Balingen
email: info@kern-sohn.com

Phone: +49-[0]7433- 9933-0
Fax: +49-[0]7433-9933-149
Internet: www.kern-sohn.com

Operating instructions
Stainless steel scale

KERN SFB

Version 1.3
02/2011
GB

English

Table of Contents

English

1 Technical Data

KERN	SFB 10K1HIP	SFB 15K5HIPM	SFB 20K2HIP
Readability (d)	1 g	5 g	2 g
Weighing range (max)	10 kg	15 kg	20 kg
Minimum load (Min)	-	100 g	-
Verification value (e)	-	5 g	-
Verification class	-	III	-
Reproducibility	1 g	5 g	2 g
Linearity	± 1 g	± 5 g	± 2 g
Recommended adjustment weight, not added (class)	10 kg (M1)	15 kg (M1)	20 kg (M1)
Warm-up time	30 minutes	10 minutes	30 minutes
Stabilization time (typical)	2-3 sec.		
Weighing unit	kg		
Auto Off	Available options 5, 15 min.		
Ambient temperature	0°C – 40°C	-10°C – 40°C	0°C – 40°C
Moist environment	0 % - 95 % (non-condensing)		
Electric Supply	Input voltage 220 V – 240 V, 50 Hz		
	Power pack secondary voltage 9V, 800mA		
Rechargeable battery (Standard)	Service life background light on for 70 h		
	Service life background light off 90 h		
	Charge time 12 h		
Dimensions display unit (B x D x H) mm	266 x 165 x 96		
Weighing surface mm	300 x 240		
IP protection	IP 67 as per DIN 60529		
Interface	RS 232 optional		

KERN	SFB 30K10HIPM	SFB 50K5HIP	SFB 50K5LHIP
Readability (d)	10 g	5 g	5 g
Weighing range (max)	30 kg	50 kg	50 kg
Minimum load (Min)	200 g	-	-
Verification value (e)	10 g	-	-
Verification class	III	-	-
Reproducibility	10 g	5 g	5 g
Linearity	± 10 g	± 5 g	± 5 g
Recommended adjustment weight, not added (class)	30 kg (M1)	50 kg (M1)	50 kg (M1)
Warm-up time	10 minutes	30 minutes	30 minutes
Stabilization time (typical)	2-3 sec.		
Weighing unit	kg		
Auto Off	Available options 5, 15 min.		
Ambient temperature	-10°C – 40°C	0°C – 40°C	0°C – 40°C
Moist environment	0 % - 95 % (non-condensing)		
Electric Supply	Input voltage 220 V – 240 V, 50 Hz		
	Power pack secondary voltage 9V, 800mA		
Rechargeable battery (Standard)	Service life background light on for 70 h		
	Service life background light off 90 h		
	Charge time 12 h		
Dimensions display unit (B x D x H) mm	266 x 165 x 96		
Weighing surface mm	300 x 240		400 x 300
IP protection	IP 67 as per DIN 60529		
Interface optional	RS232		

KERN	SFB 60K20HIPM	SFB 60K20LHIPM
Readability (d)	20 g	20 g
Weighing range (max)	60 kg	60 kg
Minimum load (Min)	400 g	400 g
Verification value (e)	20 g	20 g
Verification class	III	III
Reproducibility	20 g	20 g
Linearity	± 20 g	± 20 g
Recommended adjustment weight, not added (class)	60 kg (M1)	60 kg (M1)
Warm-up time	10 minutes	
Stabilization time (typical)	2-3 sec.	
Weighing unit	kg	
Auto Off	Available options 5, 15 min.	
Ambient temperature	-10°C – 40°C	
Moist environment	0 % - 95 % (non-condensing)	
Electric Supply	Input voltage 220 V – 240 V, 50 Hz	
	Power pack secondary voltage 9V, 800mA	
Rechargeable battery (Standard)	Service life background light on for 70 h	
	Service life background light off 90 h	
	Charge time 12 h	
Dimensions display unit (B x D x H) mm	266 x 165 x 96	
Weighing surface mm	300 x 240	400 x 300
IP protection	IP 67 as per DIN 60529	
Interface optional	RS232	
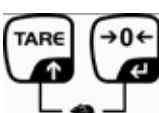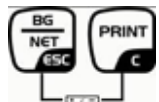
KERN	SFB 100K10HIP	SFB 120K50HIPM
Readability (d)	10 g	50 g
Weighing range (max)	100 kg	120 kg
Minimum load (Min)	-	1 kg
Verification value (e)	-	50 g
Verification class	-	III
Reproducibility	10 g	50 g
Linearity	± 10 g	± 50 g
Recommended adjustment weight, not added (class)	100 kg (M1)	120 kg (M1)
Warm-up time	30 minutes	10 minutes
Stabilization time (typical)	2-3 sec.	
Weighing unit	kg	
Auto Off	Available options 5, 15 min.	
Ambient temperature	0°C – 40°C	-10°C – 40°C
Moist environment	0 % - 95 % (non-condensing)	
Electric Supply	Input voltage 220 V – 240 V, 50 Hz	
	Power pack secondary voltage 9V, 800mA	
Rechargeable battery (Standard)	Service life background light on for 70 h	
	Service life background light off 90 h	
	Charge time 12 h	
Dimensions display unit (B x D x H) mm	266 x 165 x 96	
Weighing surface mm	400 x 300	
IP protection	IP 67 as per DIN 60529	
Interface optional	RS232	

2 Appliance overview

1. Battery status display
2. Keyboard
3. Weight display
4. Tolerance tag, see chap. 7.7
5. Weighing unit
6. Levelling screw
7. Spirit level (underneath weighing platform)

2.1 Keyboard overview

Button	Function
ON / OFF	⇨ Turn on/off
→0← (Navigation key ↵)	• Zeroing • Confirm entry
TARE (Navigation key ↑)	⇨ Taring ⇨ At numeric input increase flashing digit ⇨ Scroll forward in menu
MR (Navigation key →)	• Display sum total • Digit selection to the right
M+ (Navigation key ←)	• Add weighing value in summation memory • Digit selection to the left
PRINT (C)	• Calculate weighing data via interface • Delete
BG / NET (ESC)	• Switch-over gross weight ⇔ net weight • Back to menu/weighing mode
TARE →0←	• Activate animal weighing function
BG/NET PRINT	• Activate weighing with tolerance limits
M+ MR (MC)	• Delete total added memory

English

2.1.1 Numeric input via navigation keys

⇨ Press [→0←] current setting appears. The first digit is flashing and can be changed.

⇨ If the first digit is not to be changed, press [M+] and the second digit will start flashing. Each time you press [M+], the display unit jumps to the subsequent digit, returning to the first digit after the last digit has been pressed.

⇨ To change the selected (flashing) digit, press [TARE] repeatedly until the desired value appears. Then select by using additional digits and change these by using [M+]

⇨ Finish entry with [→0←].

2.2 Overview of displays

Display	Significance
[battery icon]	Rechargeable battery very low
STABLE	Stability display
ZERO	Zero display
GROSS	Gross weight
NET	Net weight
AUTO	Automatic add-up enabled
Kg	Weighing unit
M+	Adding
LED + / ✓ / -	Indicators for weighing with tolerance limits

3   Basic Information (General)

3.1   Proper use

The balance you purchased is intended to determine the weighing value of material to be weighed. It is intended to be used as a "non-automatic balance", i.e. the material to be weighed is manually and carefully placed in the centre of the weighing plate. As soon as a stable weighing value is reached the weighing value can be read.

3.2   Improper Use

Do not use balance for dynamic weighing. In the event that small quantities are removed or added to the material to be weighed, incorrect weighing results can be displayed due to the "stability compensation" in the balance. (Example: Slowly draining fluids from a container on the balance.)
Do not leave permanent load on the weighing plate. This may damage the measuring system.
Impacts and overloading exceeding the stated maximum load (max) of the weighing plate, minus a possibly existing tare load, must be strictly avoided. Balance may be damage by this.
Never operate balance in explosive environment. The serial version is not explosion protected.
The structure of the balance may not be modified. This may lead to incorrect weighing results, safety-related faults and destruction of the balance.
The balance may only be used according to the described conditions. Other areas of use must be released by KERN in writing.

3.3   Warranty

Warranty claims shall be voided in case

- Our conditions in the operation manual are ignored

- The appliance is used outside the described uses

- The appliance is modified or opened

- Mechanical damage or damage by media, liquids, natural wear and tear

- The appliance is improperly set up or incorrectly electrically connected

- The measuring system is overloaded

3.4 Monitoring of Test Resources

In the framework of quality assurance the measuring-related properties of the balance and, if applicable, the testing weight, must be checked regularly. The responsible user must define a suitable interval as well as type and scope of this test. Information is available on KERN's home page (www.kern-sohn.com with regard to the monitoring of balance test substances and the test weights required for this. In KERN's accredited DKD calibration laboratory test weights and balances may be calibrated (return to the national standard) fast and at moderate cost.

4 Basic Safety Precautions

4.1 Pay attention to the instructions in the Operation Manual

Carefully read this operation manual before setup and commissioning, even if you are already familiar with KERN balances.

4.2 Personnel training

The appliance may only be operated and maintained by trained personnel.

5 Transportation & Storage

5.1 Testing upon acceptance

When receiving the appliance, please check packaging immediately, and the appliance itself when unpacking for possible visible damage.

5.2 Packaging / return transport

⇨ Keep all parts of the original packaging for a possibly required return.

⇨ Only use original packaging for returning.

⇨ Prior to dispatch disconnect all cables and remove loose/mobile parts.

⇨ Reattach possibly supplied transport securing devices.

⇨ Secure all parts such as glass wind screen, weighing platform, power unit etc. against shifting and damage.

6 Unpacking and implantation

6.1 Installation Site, Location of Use

The balances are designed in a way that reliable weighing results are achieved in common conditions of use.
You will work accurately and fast, if you select the right location for your balance.

On the installation site observe the following:

- Place the balance on a firm, level surface;

- Avoid extreme heat as well as temperature fluctuation caused by installing next to a radiator or in the direct sunlight;

- Protect the balance against direct draughts due to open windows and doors;

- Avoid jarring during weighing;

- Protect the balance against high humidity, vapors and dust;

- Do not expose the balance to strong humidity for extended periods. Non-permitted condensation (condensation of air humidity on the appliance) may occur if a cold appliance is taken to a considerably warmer environment. In this case, acclimatize the disconnected appliance for ca. 2 hours at room temperature.

- Avoid static charge of goods to be weighed or weighing container.

- Being of protection type IP 67 as per DIN EN 60529, the weighing scale is suitable for short-term use in wet conditions.

Major display deviations (incorrect weighing results) may be experienced should electromagnetic fields (e.g. due to mobile phones or radio equipment), static electricity accumulations or instable power supply occur. Change location or remove source of interference.

6.2 Unpacking/implantation

Scope of delivery / serial accessories:
- Balance, see chap. 2
- Transit Securing
- Mains adapter
- Rechargeable battery
- Instruction Manual

Carefully remove the balance from the packaging, remove plastic cover, assemble the tripod and the display unit (see chap. 6.2.1) and setup balance at the intended workstation.

Remove the transportation lock:

    1. Models platform size 300 x 240 mm

Remove the marked screws.
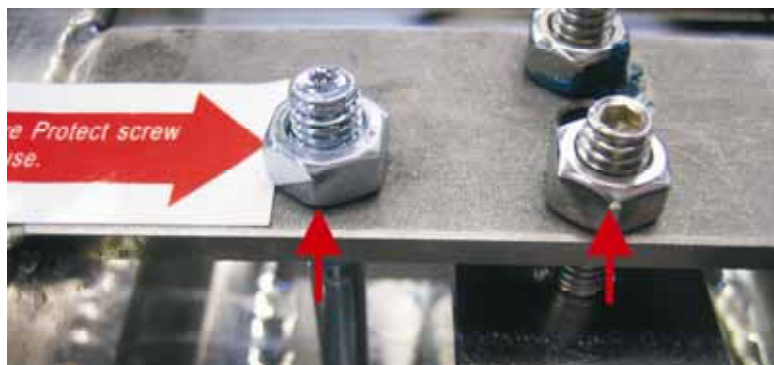
    2. Models platform size 400 x 300 mm

Remove the screw marked by the label .

Attention: The sealed screws must not be unscrewed.

Accurate weighing results require a weighing bridge with perfect horizontal alignment. During initial installation and after each change of work area it is necessary to level the weighing bridge.

    ⇨ As the air bubble is located under the weighing plate, remove it.

    ⇨ Level balance with foot screws until the air bubble of the water balance is in the prescribed circle.
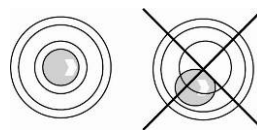
6.2.1   Tripod

Assemble example models platform size 300 x 240 mm:

Attach the tripod to the platform acc. to fig. using the 4 screws [1], securing disks and washers. Ensure that the cable is not damaged nor squeezed. Screw-in support screw [2] till it is safely fixed.

Remove display unit from holder, for that remove the turning knobs [3] on the side.

Attach the tripod with the four raised counter-sunk head screws [4] and the nuts on the holder of the display unit.
Re-attach and position display unit using the turning knobs [3].

Scope of delivery models platform size 400 x 300 mm:
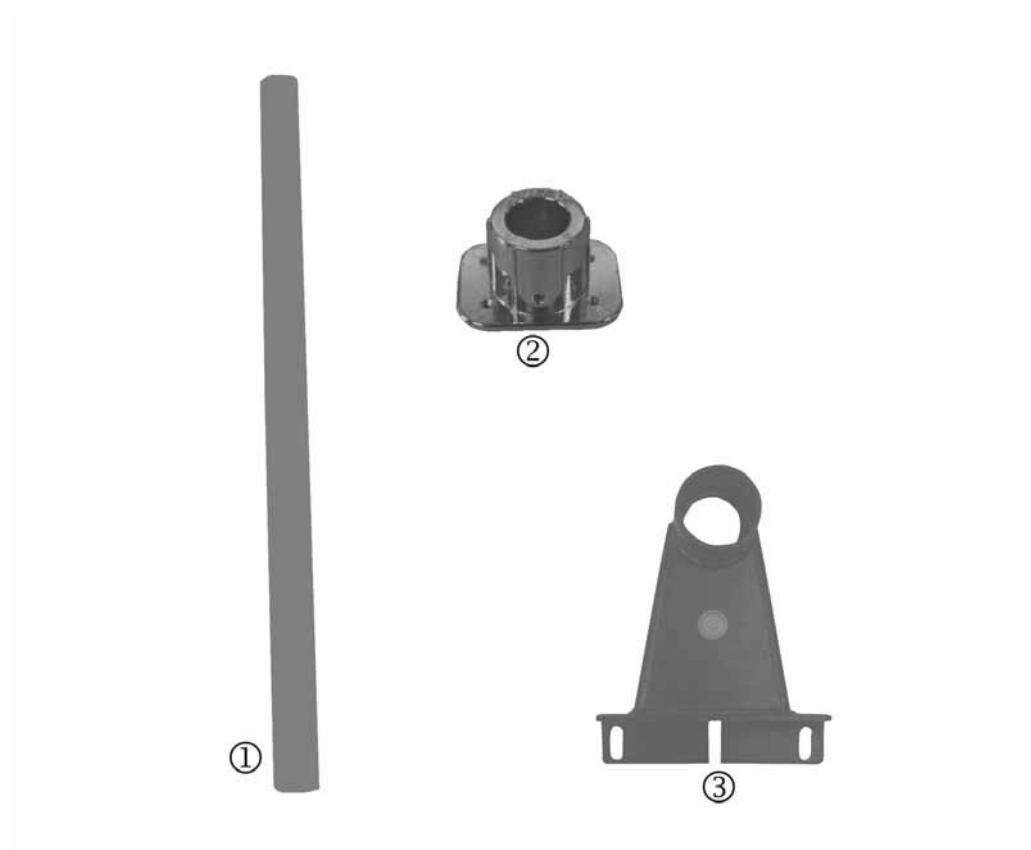
①   Tripod tube

②   Adapter display unit

③   Tripod foot

6.3 Mains connection

Power is supplied via the external mains adapter. The stated voltage value must be the same as the local voltage. Only use original KERN mains adapters. Using other makes requires consent by KERN.

6.4 Rechargeable battery operation

Before the first use, the battery should be charged by connecting it to the mains power supply for at least 12 hours.

The symbol appearing on the weight display indicates that the battery is getting low. Approximately 10 h of instrument usage are left; afterwards it will shut off automatically. Use the supplied battery charger for charging the battery. Charge status of rechargeable battery is indicated by the LED display.

red: Voltage has dropped below prescribed minimum.

green: Rechargeable battery is completely charged

yellow: Charging storage battery

To save battery life, you can enable the automatic switch-off function "AUTO OFF", see chap. 7.13.

6.5 Adjustment

As the acceleration value due to gravity is not the same at every location on earth, the balance must be coordinated in compliance with the underlying physical weighing principle to the existing acceleration due to gravity at its place of location (only if the balance has not already been adjusted to the location in the factory). This adjustment process must be carried out for the first commissioning, after each change of location as well as in case of fluctuating environment temperature. To receive accurate measuring values it is also recommended to adjust the balance periodically in weighing operation.

- In balances with a resolution of < 15 000 dividing steps an adjustment is recommended.
  In balances with a resolution of > 15 000 dividing steps a linearisation is recommended (see chap. 6.6).

- The weight to be used depends on the capacity of the scale. Carry out adjustment as near as possible to the scale's maximum weight. Info about test weights can be found on the Internet at: http://www.kern-sohn.com.

- Observe stable environmental conditions. Stabilisation requires a certain warm-up time.

Verified models:

●
i In verified balances the access to menu block „P2 CAL" is locked. For menu access, both contacts of the printed circuit board must be short-circuited by a jumper (see chap. 6.7).
Attention:
After destruction of the seal the weighing system must be re-verified by an authorised agency and a new verification wire/seal mark fitted before it can be reused for applications subject to verification.

⇨ Switch-on balance and during the selftest press [PRINT C].

<div style="text-align:right">`Pn`</div>

⇨ Press subsequently [M+ ←], [BG NET ESC], [TARE ↑], the first menu block „PO CHK" will be displayed.

<div style="text-align:right">`POCHr`</div>

⇨ Press [TARE ↑] repeatedly until „P2 CAL" will be displayed.

<div style="text-align:right">`P2CAL`</div>

⇨ Press [→0← ↵], the first menu item „COUNT" will be displayed

<div style="text-align:right">`CoUnt`</div>

⇨ Press [TARE ↑] repeatedly until „CAL" will be displayed.

<div style="text-align:right">`CAL`</div>

⇨ Acknowledge with [→0← ↵]. Ensure that there are no objects on the weighing plate.

<div style="text-align:right">`UnLd`</div>

⇨ Wait for stability display, then press [→0← ↵].

<div style="text-align:right">STABLE `UnLd`</div>

⇨ The currently set adjustment weight will be displayed.

<div style="text-align:right">`15.000` kg</div>

⇨ To change by using the navigation buttons (see chap. 2.1.1) select the desired setting, the active digit is flashing.

⇨ Acknowledge with [→0← ↵].

<div style="text-align:right">STABLE `LoAd`</div>

⇨ Carefully place adjusting weight in the centre of the weighing plate. Wait for stability display, then press [→0← ↵].

<div style="text-align:right">`PASS`</div>

⇨ After the adjustment the balance will carry out a self-test. Remove adjusting weight **during** selftest, balance will return into weighing mode automatically. An adjusting error or incorrect adjusting weight will be indicated by the error message; repeat adjustment procedure.

<div style="text-align:right">STABLE ZERO GROSS `0.000` kg</div>

●
i Prior to a new verification the access to the menu block „P2 CAL" must be locked again by removing the jumper.

Not verifiable models:

⇨ Call-up menu item P3 CAL⇨Cal⇨noLin, see chap. 8

`noLin`

⇨ Acknowledge with [→0←]. Ensure that there are no objects on the weighing plate.

Wait for stability display, then press [→0←].

`STABLE UnLd kg`

⇨ The currently set adjustment weight will be displayed.

`i15.000 kg`

⇨ To change by using the navigation buttons (see chap. 2.1.1) select the desired setting, the active digit is flashing.

⇨ Acknowledge with [→0←].

`STABLE LoAd`

⇨ Carefully place adjusting weight in the centre of the weighing plate. Wait for stability display, then press [→0←].

`PASS`

⇨ After the adjustment the balance will carry out a self-test. Remove adjusting weight **during** selftest, balance will return into weighing mode automatically.
An adjusting error or incorrect adjusting weight will be indicated by the error message; repeat adjustment procedure.

`STABLE ZERO GROSS 0.000 kg`

6.6 Linearisation (not verifiable models)

Linearity shows the greatest deviation of a weight display on the scale to the value of the respective test weight according to plus and minus over the entire weighing range. If linearity deviation is discovered during a testing instrument control, you can improve this by means of linearization.

ℹ
- In balances with a resolution of > 15 000 dividing steps carrying out a linearisation is recommended.
- Carrying out linearization is restricted to specialist staff possessing well acquainted with the workings of weighing scales.
- The test weights to be used must be adapted to the weighing scale's specifications; see chapter "testing instruments control".
- Observe stable environmental conditions. Stabilisation requires a certain warm-up time.
- After successful linearisation you will have to carry out calibration; see chapter "testing instruments control".

⇨ Call-up menu item P3 CAL⇨Cal⇨Liner, see chap. 8

| LinEr |

⇨ Confirm by pressing [→0←], the password query „Pn" will be displayed.

| Pn |

⇨ Press subsequently [BG NET ESC], [M+ ←], [MR →].

| Ld 0 |

⇨ Ensure that there are no objects on the weighing plate.

Wait for stability display, then press [→0←].

| Ld 1 |

The adjustment points are freely selectable (10Max – Max), e.g. in a balance max 300 kg for the first adjustment point, an adjustment weight of 30kg / 40 kg….290 kg can be selected.

⇨ When „Ld 1" is displayed, place the first adjustment weight carefully in the centre of the weighing plate. Wait for stability display, then press [→0←].

| Ld 2 |

⇨ When „Ld 2" is displayed, place the second adjustment weight carefully in the centre of the weighing plate. Wait for stability display, then press [→0←].

| Ld 3 |

⇨ When "Ld 3" is displayed, put the third adjustment weight (max) carefully in the centre of the weighing platform. Wait for stability display, then press [→0←].

| PASS |

⇨ After the adjustment the balance will carry out a self-test. Remove adjusting weight **during** selftest, balance will return into weighing mode automatically.

| 0.000 kg |

6.7   Verification

General introduction:

According to EU directive 90/384/EEC balances must be verified if they are used as follows (legally controlled area):

a) For commercial transactions if the price of goods is determined by weighing.
b) For the production of medicines in pharmacies as well as for analyses in the medical and pharmaceutical laboratory.
c) For official purposes.
d) For manufacturing final packages.

In cases of doubt, please contact your local trade in standard.

Verification notes:

An EU Qualification Approval is in existence for verified weighing systems. If a balance is used where obligation to verify exists as described above, it must verified and re-verified in regular intervals.
Reverification is carried out according to relevant national statutory regulations. The validity for verification of balances in Germany is e.g. 2 years.
The legal regulation of the country where the balance is used must be observed!

ℹ
- Verification of the weighing system is invalid without the "seal".

Notes on verified weighing systems

Access to conductor plate:

- Removing verification seals
- How to open the display unit
- To adjust / access the menu set the jumper [J] over both pins.

7   Operation

7.1   Start-up

⇨ Press ⌷ON/OFF⌷ , and the instrument will carry out a self-test. The instrument is ready
for weighing when a weight display appears.

7.2   Switching Off

⇨ Press ⌷ON/OFF⌷ until the display disappears.

7.3   Zeroing

Resetting to zero corrects the influence of light soiling on the weighing plate.
Resetting range ± 2 % max.
The instrument comprises an automatic zero setting function, however, the
instrument can be reset to zero whenever needed as described below.

⇨ Remove load from weighing system

⇨ Press ⌷→0←⌷, and the zero display as well as the ZERO indicator will appear.

7.4   Simple weighing

⇨ Place goods to be weighed on balance.

⇨ Wait for stability display STABLE.

⇨ Read weighing result.

ℹ   **Overload warning**

Overloading exceeding the stated maximum load (max) of the device, minus a
possibly existing tare load, must be strictly avoided. The instrument may be
damaged by overloading.
Exceeding of maximum load is indicated by "----" as well as a signal sound.
Remove load from weighing system or reduce preload.

7.5 Switch-over weighing unit (only not verifiable models)

How to enable weighing units:

⇨ Call-up menu item **P5 Unt**, see chap. 8

$$P5Unt$$

⇨ Press [→0← / ↵] and the first weighing unit with the current setting will be displayed.

$$on \; ^{kg}$$

⇨ To enable [on] / disable [off] the displayed weighing unit, press [TARE / ↑].

⇕

$$oFF \; ^{kg}$$

⇨ Acknowledge with [→0← / ↵]. The next unit with the current setting will be displayed.

$$on \; ^{lb}$$

⇨ To enable [off] / disable [on] the displayed weighing unit, press [TARE / ↑].

⇨ Acknowledge with [→0← / ↵].

⇨ Repeat sequence for each weighing unit.
Note: „tj" and „Hj" cannot be activated at the same time, only either ... or ... .

⇨ Return to weighing mode using [BG / NET / ESC]

$$0.000 \; ^{kg}$$

Switch-over weighing unit:

⇨ Keep [BG / NET / ESC] pressed, the display changes over to the weighing units activated before (e.g. kg ⇆ lb)

$$1.000 \; ^{kg}$$

⇕

$$2.205 \; ^{lb}$$

7.6　Weighing with tare

⇨ Deposit weighing vessel. After successful stop check press the [TARE] button. The zero display and the indicator **NET** appear.

```
STABLE
ZERO
      0.000 kg
NET
```

The weight of the container is now internally saved.

⇨ Weigh the material, the net weight will be indicated.

⇨ The weight of the weighing container will be displayed as a minus number after removing the weighing container.

⇨ The tare procedure can be repeated as many times as necessary, for example with initial weighing of several components for a mix (add-on weighing). The limit is reached when the taring range (see type plate) capacity is full.

⇨ Switch between gross weight and net weight by pressing the [BG/NET/ESC] key.

⇨ To delete the tare value, remove load from weighing plate and press [TARE].

7.7　Weighing with tolerance range

You may determine an upper and lower limit for weighing with tolerance limits in order to ensure that the weighed load remains exactly within the fixed tolerance limits.
During tolerance checks such as dispensing, portioning and sorting, the instrument will indicate any lower deviation or exceeding of limits with the help of a visual signal or audio sound.

Acoustic signal:
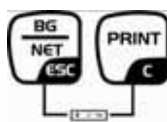The audio sound depends on the setting of the menu block "BEEP".
Options:

- no　Acoustic signal turned off

- ok　Acoustic signal sounds when load is within tolerance limits

- ng　Acoustic signal sounds when load is beyond tolerance limits

Optical signal:

Three colour pilot lamps indicate whether load is within the two tolerance limits.
The signal lamps provide the following information:

	+	Goods to be weighed above tolerance limit	Red signal lamp glowing
	✔	Goods to be weighed within tolerance range	Green signal lamp glowing
	-	Goods to be weighed below tolerance limit	Red signal lamp glowing

Settings for tolerance weighing may be set either by calling up menu block "**P0 CHK**" (See chap. 8) or by applying the faster option of pressing the key combination

Settings	STABLE ZERO GROSS ⊔.⊔⊔⊔ kg
	⇩
⇨ Press [BG NET ESC] and [PRINT C] at the same time in weighing mode.	SEE H
⇨ Press [TARE ↑]; the display used for entering the lower limit SET L appears.	SEE L
⇨ Press [→0← ↵]; current setting appears.	⌐00.000 kg
⇨ Use the navigation keys (See chap. 2.1.1) for entering the lower limit, e. g. 1000 kg; the currently active digit will be flashing.	⌐0⌐.000 kg
⇨ Confirm input by [→0← ↵].	SEE L
⇨ Select SET H using [TARE ↑]	SEE H

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⇨ Press [→0← key], the current setting for the upper limit will be shown.

⇨ Use the navigation keys (See chap. 2.1.1) to set the upper limit, e. g. 1100 kg; the currently active digit will be flashing.

⇨ Confirm input by [→0← key].

⇨ Select **BEEP** by [TARE key].

⇨ Press [→0← key], the current setting for the audio sound will be shown.

⇨ Use [TARE key] (no, ok, ng) to select the desired setting.

⇨ Confirm input by [→0← key].

⇨ Press [BG/NET/ESC key] and the weighing system will go into tolerance weighing mode. From here evaluation takes place whether the goods to be weighed are within the two tolerance limits.

Weighing with tolerance range

⇨ Tare, if using a weighing container.

⇨ Put on goods to be weighed, tolerance control is started

Display
₁0 1.100 kg
SEt H
bEEP
ot
bEEP
STABLE ZERO GROSS 0.000 kg

ℹ
- The tolerance control is not active when the weight is under 20d.
- To delete limits enter a value of "00.000 kg".

7.8 Manual totalizing

With this function the individual weighing values are added into the summation memory by pressing [M+] and edited, when an optional printer is connected.

ⓘ
- Menu settings:
  „**P1 COM**" or „**P2 COM**" ⇨ „**MODE**" ⇨ „**PR2**"", see chap. 8
- The totalisation function is not active when the weight is under 20d.

Add up:

⇨ Place goods to be weighed A.

Wait until the stability display **STABLE** appears, then press [M+]. The weight value will be saved and a printout received if an optional printer is connected.

$$\boxed{\text{ACC } 1}$$

⇨ Remove the weighed good. More weighed goods can only be added when the display = zero.

$$\boxed{0.000 \text{ kg}}$$

⇨ Place goods to be weighed B.

Wait until the stability display appears, then press [M+]. The weight value will be added to the summation memory and possibly printed. The number of weighing processes followed by the total weight will be shown for 2 sec.

$$\boxed{\text{ACC } 2}$$

⇨ Add more weighed goods as described before.
Please note that the weighing system must be unloaded between the individual weighing procedures.

⇨ This process can be repeated until the capacity of the weighing system is exhausted.

Display of the saved weighing data:

⇨ Press [MR] and the number of weighings followed by the total weight will be shown for 2 sec. To receive a printout, press [PRINT] during this display.

Delete weighing data:

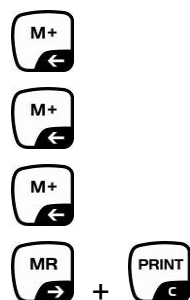⇨ Press [M+] and [MR] at the same time. The data in the summation memory are deleted.

STABLE GROSS A C C 0 M+

Printout example:

```
**************
NO.          1
     1.000kg                    ←——————  1
**************
NO.          2
     0.500kg                    ←——————  2
**************
NO.          3
     0.700kg                    ←——————  3
**************
  total                         ←——————  4
NO.          3
        2.200kg
```

1   First weighing   [M+]

2   Second weighing   [M+]

3   Third weighing   [M+]

4   Number of weighings / total   [MR] + [PRINT]

7.9 Automatic adding-up

With this function the individual weighing values are automatically added into the summation memory when the balance is unloaded without pressing [M+ ⟵] and edited, when an optional printer is connected.

i
- Menu settings:
  „**P1 COM**" or „**P2 COM**" ⇨ „**MODE**" ⇨ „**AUTO**"", see chap. 8
  Indicator **AUTO** is displayed.

STABLE / ZERO / GROSS   **0.000** AUTO kg

Add up:

⇨ Place goods to be weighed A.
  After the standstill control sounds a signal tone. The weighing value is added to the summation memory, followed by printing.

STABLE / GROSS   **ACC 1** AUTO M+

⇨ Remove the weighed good. More weighed goods can only be added when the display = zero.

⇨ Place goods to be weighed B.
  After the standstill control sounds a signal tone. The weighing value is added to the summation memory, followed by printing. The number of weighings, followed by the total weight, will be shown for 2 sec.

STABLE / GROSS   **ACC 2** AUTO M+

⇨ Add more weighed goods as described before.
  Please note that the weighing system must be unloaded between the individual weighing procedures.

⇨ This process can be repeated until the capacity of the weighing system is exhausted.

i Display and delete the weighing data, as well as printout examples see chap. 7.8.

7.10 Animal weighing

The animal weighing function is ideal for unstable loads.
The weighing system calculates and displays a stable mean average from several weighing values.

The animal weighing program may either be enabled by calling up menu block **"P3 OTH"** or **"P4 OTH"** ⇨ „**ANM**" ⇨ „**ON**" (See chap. 8) or by using the faster option of a key combination.

⇨ Place the load onto the weighing system and wait until it is fairly stable.

⇨ Press [TARE] and [→0←] at the same time, a signal sounds, meaning that the animal weighing function is enabled.
During the calculation of a mean average you can add or remove loads as the mean average will be continuously updated.

⇨ To disable the animal weighing function press [TARE] and [→0←] at the same time.

7.11 Lock keyboard

Go to menu item "**P3 OTH**" or "**P4 OTH**" ⇨ „**LOCK**", see chap. 8, and enable/disable the keyboard interlock. The enabled function will be locked after 10 minutes of inactivity. **"K-LCK"** will be displayed as soon as a key is pressed.

To cancel locking, keep pressed [PRINT], [MR] and [→0←] at the same time (2s) until "**U LCK**" appears.

7.12 Display background illumination

⇨ Keep [→0←] pressed (3s) until "**setbl**" appears.

$$ 5Et bL $$
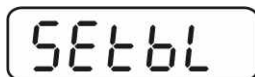
⇨ Press [→0←] again and the current setting will be displayed.

⇨ Use [TARE] to select desired setting.

bl on   Background lighting is on continuously

bl off   Background illumination off

bl Auto   Automatic background illumination on when weighing plate is loaded

⇨ Save entry by [→0←] or cancel using [BG NET ESC].

7.13 Automatic switch-off function "AUTO OFF"

The instrument will switch off automatically after a set time when the display unit or weighing bridge has been idle.

⇨ Keep [→0←] pressed (3s) until "**setbl**" appears.

$$ \boxed{SEtbL} $$

⇨ Call up **AUTO OFF** function using [TARE]

$$ \boxed{SEtoF} $$

⇨ Press [→0←] - current setting appears.

⇨ Use [TARE] to select desired setting.

of on   **AUTO OFF** function disabled
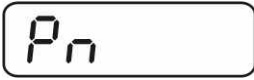
of 5   Weighing system will switch off after 5 min

of 15   Weighing system will switch off after 15 min

⇨ Save entry by [→0←] or cancel using [BG NET ESC] .

8 Menu

Navigation in the menu:

Call up menu	⇨ Switch on instrument and press [PRINT/C] during self-test. P_n ⇨ Press in turn [M+/←], [BG/NET/ESC], [TARE/↑] and the first menu block "PO CHK" will appear. $POCHF$
Select menu block	⇨ With help of [TARE/↑], the individual menu items can be selected one after the other.
Select setting	⇨ Confirm selected menu item with [→0←/↵]. The current setting will be displayed.
Change settings	⇨ Use the navigation keys, see chap. 2.1 to switch between the available settings.
Acknowledge setting / exit the menu	⇨ Save entry by [→0←/↵] or cancel using [BG/NET/ESC].
Return to weighing mode	⇨ To exit menu, press [BG/NET/ESC] repeatedly.

English

Overview of not verifiable models:

Menu block Main menu	Menu item Submenu	Available settings / explanation	
PO CHK **Weighing with tolerance range, see chap. 7.7**	SET H	Upper limit value, input see chap. 7.7	
	SET LO	Lower limit value, input see chap. 7.7	
	BEEP	no	Acoustic signal for weighing with tolerance range switched off
		ok	Audio sound when load is within tolerance limits
		nG	Audio sound when load is beyond tolerance limits
P1 REF **Zero point settings**	A2n0	Automatic zero point correction (Autozero) by changing the display, digits selectable (0.5d, 1d, 2d, 4d)	
	0AUto	Zero setting range Load range where the display after switching-on the balance is set to zero. Selectable 0, 2, 5, 10, 20, 50, 100 %	
	0rAGE	Zero setting range Load range where the display is set to zero by pressing →0←. Selectable 0, 2, 4, 10 , **20** , 50, 100%.	
	0tArE	Automatic taring „on / off", taring range adjustable in menu item „0Auto".	
	SPEEd	Not documented	
	Zero	Zero point setting	
P2 COM **Interface parameter**	MODE	CONT	Continuous data output
		ST1	One output for stable weighing value
		STC	Continuous data output of stable weighing values
		PR1	Output after pressing PRINT C
		PR2	Manual totalizing, see chap. 7.8. Press M+ and the weighing value will be added to the summation memory and issued.
		AUTO	For automatic add-up see chap. 7.9. This function is used to issue and add individual weighing values automatically to the summation memory on unloading of weighing scale.
		ASK	Remote control instructions: R, „Read" T, „Tare" Z, „Zero reset"
		wirel	Not documented
		kit 1	
	BAUD	Available Baudrate: 600, 1200, 2400, 4800, **9600**	
	Pr	7E1	7 bits, even parity
		7o1	7 bits, odd parity
		8n1	8 bits, no parity
	PTYPE	**tPUP**	Standard printer setting
		LP50	Not documented
	Lab	Data output format	
	Prt		
	LAnG	eng	Standard settings English
		chn	

P3 CAL	COUNT	Display internal resolution
Configuration	DECI	Position of the decimal dot
	DUAL	Setting balance type, capacity (Max) and readability (d)

When „DUAL" is displayed, press [→0← key], the current setting will appear.

Select desired setting by [TARE key].

„off" Single-range balance
„on"   Dual range balance

Confirm by [→0← key], the display „r1inc" for entering the readability appears (in a dual range balance for the first weighing range).

Press [→0← key] and current setting will be displayed.

Use [TARE key] to select the desired setting and confirm by [→0← key], „r1inc" will be displayed.

Press [TARE key], the display „r1CAP" for entering capacity will appear (at dual range balance for the first range).

Press [→0← key] and current setting will be displayed. Using the navigation buttons (see chap. 2.1.1) select the desired setting, the active digit is flashing.

Acknowledge with [→0← key]

In a **single-range balance** the entry of capacity / readability is finished.
either in single-range balance

Press [BG/NET/ESC key], the unit will return to the menu
or

In a **dual range balance** enter readability/verification value and capacity of the second weighing range.

Press [BG/NET/ESC key], the display „CAP2" for entering the capacity of the second weighing range will appear.

Press [→0← key] and current setting will be displayed. Using the navigation buttons (see chap. 2.1.1) select the desired setting, the active digit is flashing.

Confirm input by [→0← key].

Press [TARE key], the display „inC2" for entering the readability of the second weighing range will appear.

Press [→0← key] and current setting will be displayed.

Select desired setting with [TARE key] and acknowledge by [→0← key].

Press [BG/NET/ESC key], the unit will return to the menu
Please note: Max 2 > Max 1, d2 > d1

	CAL	noLin	Adjustment, see chap. 6.5
		Liner	For linearisation see chapter 6.6
	GrA	Not documented	
P4 OTH	LOCK	on	Keyboard lock enabled, see chap. 7.11
		off	Keyboard lock disabled
	ANM	on	Animal weighing enabled, see chap. 7.10
		off	Animal weighing disabled
P5 Unt **Switch-over weighing unit, see chap. 7.5**	kg	on	
		off	
	lb	on	
		off	
	oz	on	
		off	
	tJ	on	
		off	
	HJ	on	
		off	
P6 xcl		Not documented	
P7 rst		Use ⏎ to reset balance settings to factory default.	
P8 uwb		Not documented	

Overview of verified models:

In verified balances the access to „P2 CAL and „P4 tAr" is locked. For menu access, both contacts of the printed circuit board must be short-circuited by a jumper (see chap. 6.7).
Attention:
After destruction of the seal the weighing system must be re-verified by an authorised agency and a new verification wire/seal mark fitted before it can be reused for applications subject to verification.

Menu block Main menu	Menu item Submenu	Available settings / explanation	
PO CHK **Weighing with tolerance range, see chap. 7.7**	SET H	Upper limit value, input see chap. 7.7	
	SET LO	Lower limit value, input see chap. 7.7	
	BEEP	no	Acoustic signal for weighing with tolerance range switched off
		ok	Audio sound when load is within tolerance limits
		ng	Audio sound when load is beyond tolerance limits
P1 COM **Interface parameter**	MODE	CONT	Continuous data output
		ST1	One output for stable weighing value
		STC	Permanent data output more stable Weighing values
		PR1	Output after pressing [PRINT C]
		PR2	Manual totalizing, see chap. 7.8. Press [M+] and the weighing value will be added to the summation memory and issued.
		AUTO	For automatic add-up see chap. 7.9. This function is used to issue and add individual weighing values automatically to the summation memory on unloading of weighing scale.
		ASK	Remote control instructions: R, „Read" T, „Tare" Z, „Zero reset"
	BAUD	Available Baudrate: 600, 1200, 2400, 4800, 9600	
	Pr	7E1	7 bits, even parity
		7o1	7 bits, odd parity
		8n1	8 bits, no parity
	PTYPE	tPUP	Standard printer setting
		LP50	Not documented

P2 CAL	COUNT	Display internal resolution
	DECI	Position of the decimal dot
Configuration	DUAL	Setting balance type, capacity and readability / verification value

When „DUAL" is displayed, press ![→0← key], the current setting will appear.

Select desired setting by ![TARE key].

„off" Single-range balance
„on" Dual range balance

Confirm by ![→0← key], the display „r1inc" for entering the readability appears (in a dual range balance for the first weighing range).

Press ![→0← key], current setting will be displayed.

Use ![TARE key] to select the desired setting and confirm by ![→0← key], „r1inc" will be displayed.

Press ![TARE key], the display „r1CAP" for entering capacity will appear (at dual range balance for the first range).

Press ![→0← key], current setting will be displayed. Using the navigation buttons (see chap. 2.1.1) select the desired setting, the active digit is flashing.

Acknowledge with ![→0← key].
In a **single-range balance** the entry of capacity / readability is finished.
either in single-range balance

Press ![BG NET ESC key], the unit will return to the menu
or
    In a **dual range balance** enter readability/verification value and
    capacity of the second weighing range.

Press ![BG NET ESC key], the display „CAP2" for entering the capacity of the second weighing range will appear.

Press ![→0← key] and current setting will be displayed. Using the navigation buttons (see chap. 2.1.1) select the desired setting, the active digit is flashing.

Confirm input by ![→0← key].

Press ![TARE key], the display „inC2" for entering the readability of the second weighing range will appear.

Press ![→0← key] and current setting will be displayed.

Select desired setting with ![TARE key] and acknowledge by ![→0← key].

Press ![BG NET ESC key], the unit will return to the menu
Please note: Max 2 > Max 1, d2 > d1

	CAL	Adjustment, see chap. 6.5	
	GrA	Not documented	
P3 OTH	LOCK	on	Keyboard lock enabled, see chap. 7.11
		off	Keyboard lock disabled
	ANM	on	Animal weighing enabled, see chap. 7.10
		off	Animal weighing disabled
P4	tAr	Restricted taring range Press [→0←] and current setting will be displayed. Using the navigation buttons (see chap. 2.1.1) select the desired setting, the active digit is flashing. Confirm input by [→0←].	

English

9 Service, maintenance, disposal

9.1 Cleaning

- Before cleaning, disconnect the appliance from the operating voltage.

- Cleaning is possible by water jet and short-time immersion.

- Do not apply aggressive detergents (solvents etc.).

9.2 Service, maintenance

The appliance may only be opened by trained service technicians who are authorized by KERN.
Before opening, disconnect from power supply.

9.3 Disposal

Disposal of packaging and appliance must be carried out by operator according to valid national or regional law of the location where the appliance is used.

9.4 Error messages

Error message	Description	Possible causes
- - - - -	Maximum load exceeded	• Remove load from scale or reduce preload.
"Err 4"	Zeroing range exceeded due to switching-on balance or pressing [→0←] (normally 4% max)	• Object on the weighing plate • Overload when zeroing • Improper adjustment • Damaged weighing cell • Damaged electronics
"Err 6"	Value outside the A/D changer range	• Weighing plate not installed • Damaged weighing cell • Damaged electronics

Should other error messages occur, switch balance off and then on again. If the error message remains inform manufacturer.

10 Data output RS 232C (optional)

Weighing data can be issued according to menu settings either via the RS 232C interface or by pressing PRINT via the interface.

This data exchange is asynchronous using ASCII - Code.

The following conditions must be met to provide successful communication between the weighing balance and the printer.

- Use a suitable cable to connect the weighing balance to the interface of the printer. Faultless operation requires an adequate KERN interface cable.

- Communication parameters (baud rate, bits and parity) of balance and printer must match. For detailed description of interface parameters see chap. 8, menu block „**P1 COM**" or „**P2 COM**".

10.1 Technical Data

Connector	25 pin d-subminiature bushing
	Pin 2 input
	Pin 3 output
	Pin 5 signal earth
Baud rate	600/1200/2400/4800/9600
Parity	8 bits, no parity / 7 bits, even parity / 7 bits, odd parity

10.2 Printer mode

- Standard printout "weighing data"

ST	Stable value
US	Instable value
GS	Gross weight
NT	Net weight
\<lf\>	Space line
\<lf\>	Space line

Printout example (KERN YKB-01N,)

ST, GS	1.000kg

- Printout "summation memory"

*************		
\<lf\>		Space line
TOTAL NO:	3	Number weighing processes
TOTAL wgt.:	0.447KG	Total of all individual weighings
*************		

10.3 Continuous data output

con1: Weighing mode

HEADER1: ST=STABLE， US=UNSTABLE
HEADER2: NT=NET， GS=GROSS

11 Instant help

In case of an error in the program process, briefly turn off the balance and disconnect from power supply. The weighing process must then be restarted from the beginning.

Help:

Fault	Possible cause
The displayed weight does not glow.	• The balance is not switched on.
	• Mains power failure (mains cable defective).
	• Power supply interrupted.
	• (Rechargeable) batteries are inserted incorrectly or empty
	• No (rechargeable) batteries inserted.
The displayed weight is permanently changing	• Draught/air movement
	• Table/floor vibrations
	• Weighing plate has contact with other objects.
	• Electromagnetic fields / static charging (choose different location/switch off interfering device if possible)
The weighing result is obviously incorrect	• The display of the balance is not at zero
	• Adjustment is no longer correct.
	• Great fluctuations in temperature.
	• Warm-up time was ignored.
	• Electromagnetic fields / static charging (choose different location/switch off interfering device if possible)

Should other error messages occur, switch balance off and then on again. If the error message remains inform manufacturer.